Chemical Science

www.rsc.org/chemicalscience

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

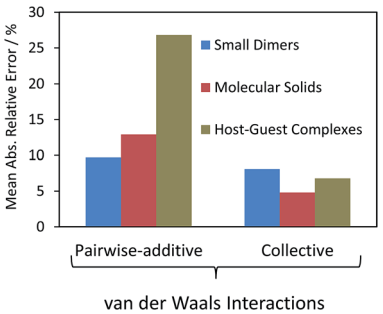
IN THIS ISSUE

ISSN 2041-6539 CODEN CSHCBM 6(6) 3273–3636 (2015)

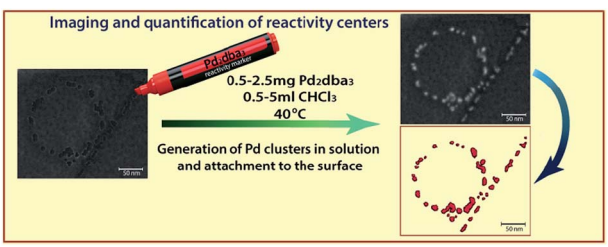
Cover
See V. P. Ananikov *et al.*, pp. 3302–3313.
Image reproduced by permission of V. P. Ananikov from *Chem. Sci.*, 2015, **6**, 3302.

Inside cover
See Gilmar F. Salgado *et al.*, pp. 3314–3320.
Image reproduced by permission of Gilmar F. Salgado from *Chem. Sci.*, 2015, **6**, 3314.
Image modified with permission from the original "Boat in Storm" by Artem Rhads Cheboha.

PERSPECTIVE



EDGE ARTICLES



Chemical Science

www.rsc.org/chemicalscience

Chemical Science (electronic: ISSN 2041-6539) is published monthly by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WF, UK.

Chemical Science is a Gold Open Access journal and all articles from 2015 onwards are free to read. Please email **orders@rsc.org** to register your interest or contact RSC Order Department, Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WF, UK

Tel +44 (0)1223 432398; E-mail **orders@rsc.org**

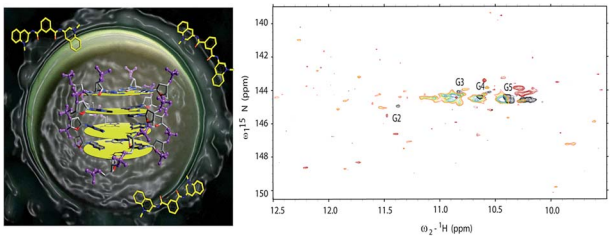
Advertisement sales: Tel +44 (0) 1223 432246;
Fax +44 (0) 1223 426017; E-mail **advertising@rsc.org**

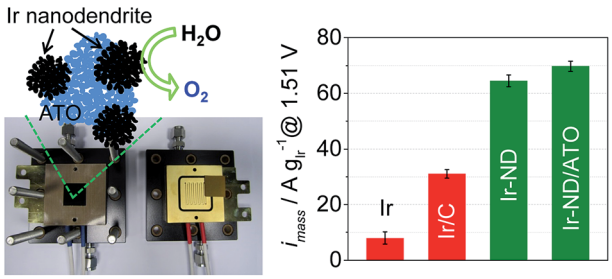
For marketing opportunities relating to this journal, contact **marketing@rsc.org**

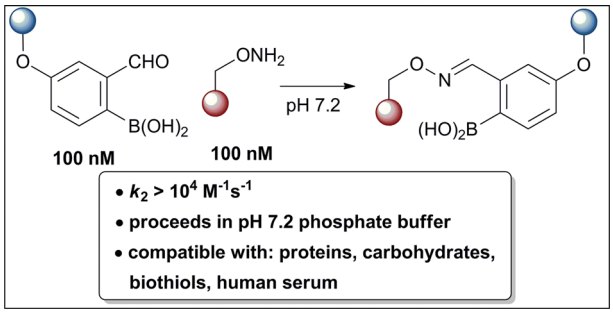
Information for authors

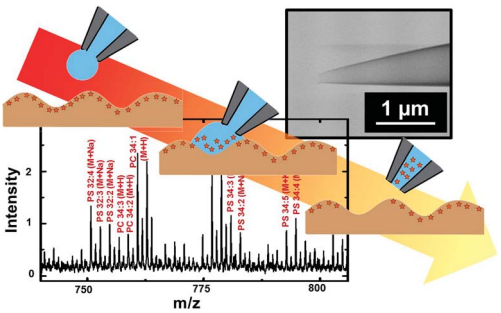
Full details on how to submit material for publication in Chemical Science are given in the Instructions for Authors (available from **http://www.rsc.org/authors**). Submissions should be made via the journal's homepage: **http://www.rsc.org/chemicalscience**.

Authors may reproduce/republish portions of their published contribution without seeking permission from the RSC, provided that any such republication is accompanied by an acknowledgement in the form: (Original Citation)–Reproduced by permission of The Royal Society of Chemistry.

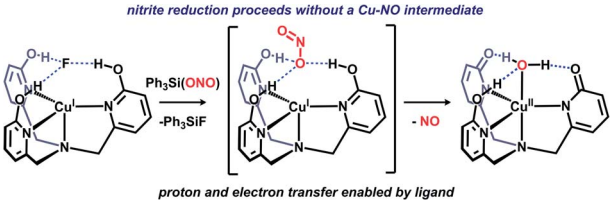


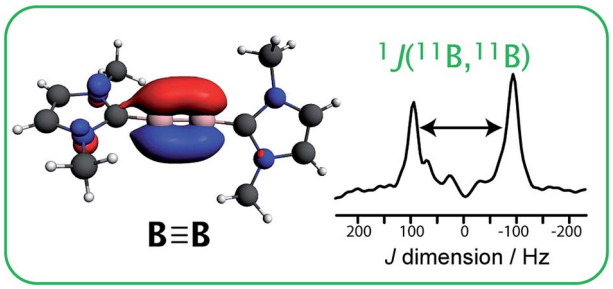


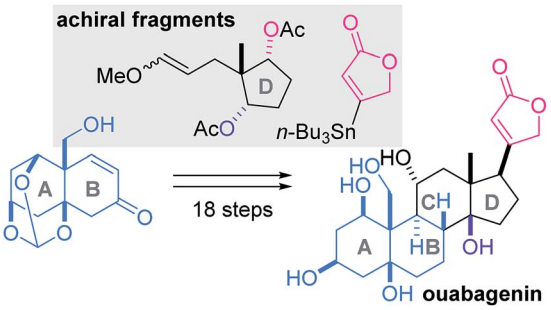


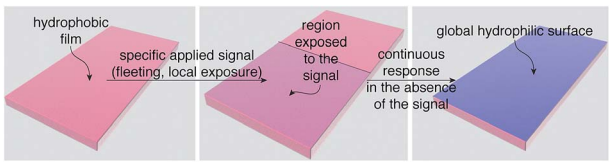


EDGE ARTICLES

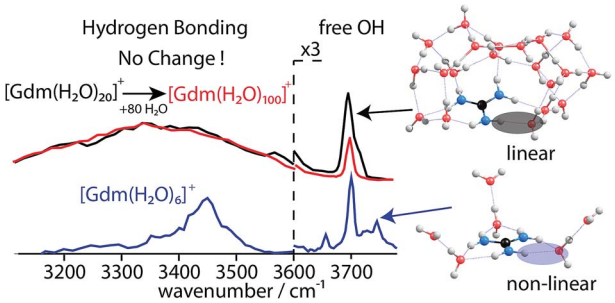


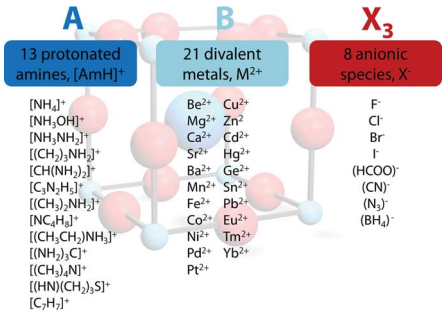


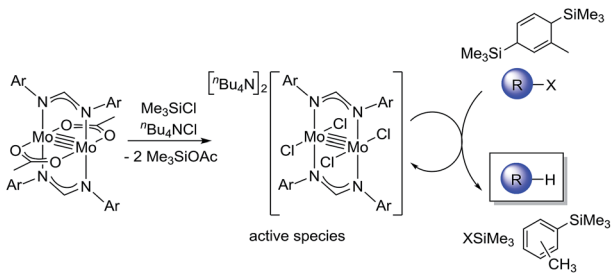


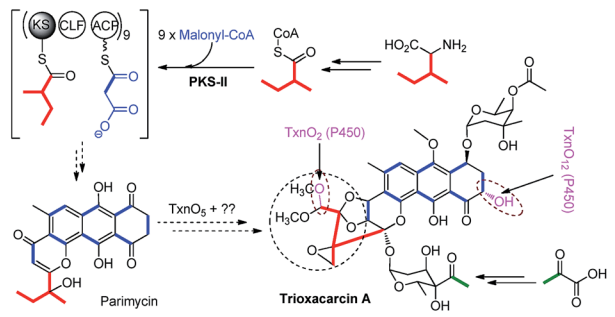


EDGE ARTICLES

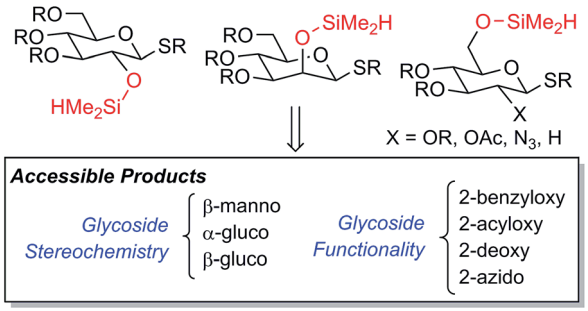








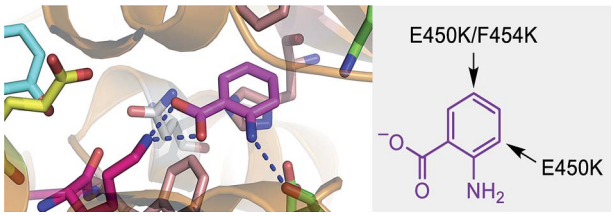
EDGE ARTICLES



Sugar silanes: versatile reagents for stereocontrolled glycosylation *via* intramolecular aglycone delivery

Jordan T. Walk, Zachary A. Buchan and John Montgomery*

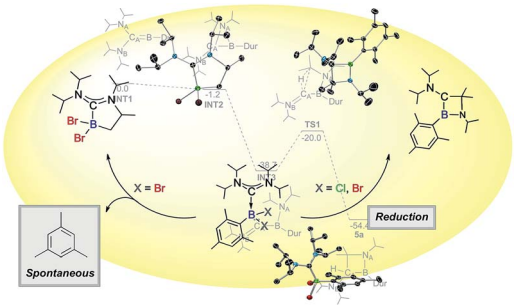
A new method for the intramolecular glycosylation of alcohols is described.



Extending the biocatalytic scope of regiocomplementary flavin-dependent halogenase enzymes

Sarah A. Shepherd, Chinnan Karthikeyan, Jonathan Latham, Anna-Winona Struck, Mark L. Thompson, Binuraj R. K. Menon, Matthew Q. Styles, Colin Levy, David Leys and Jason Micklefield*

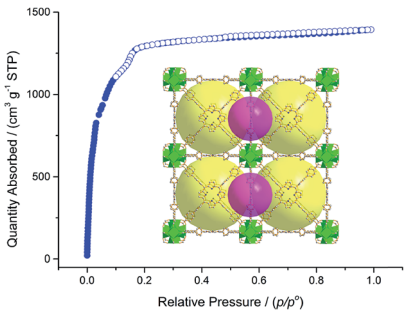
Targeted mutagenesis increases the activity and alters the regioselectivity of flavin-dependent halogenases.



Generation of 1,2-azaboretidines *via* reduction of ADC borane adducts

H. Braunschweig,* A. Gackstatter, T. Kupfer, T. Scheller, F. Hupp, A. Damme, N. Arnold and W. C. Ewing

ADC borane adducts $RBX_2 \cdot ADC$ (R = Mes, Dur; X = Cl, Br; ADC = $:C(NiPr_2)_2$) have been prepared and reduced by KC_8 to afford air stable 1,2-azaboretidines with high selectivity.

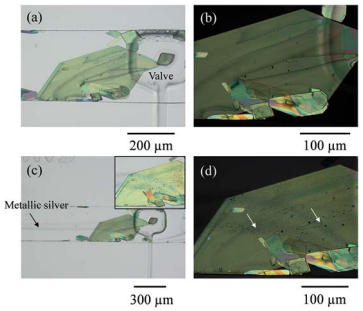


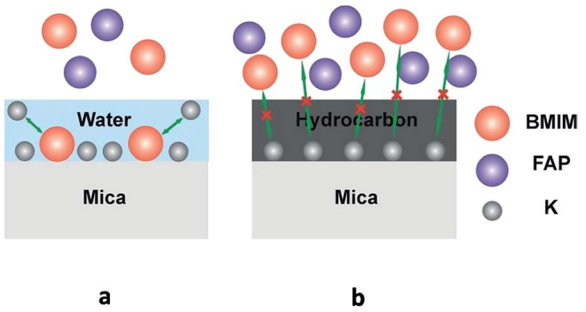
Stable porphyrin Zr and Hf metal–organic frameworks featuring 2.5 nm cages: high surface areas, SCSC transformations and catalyses

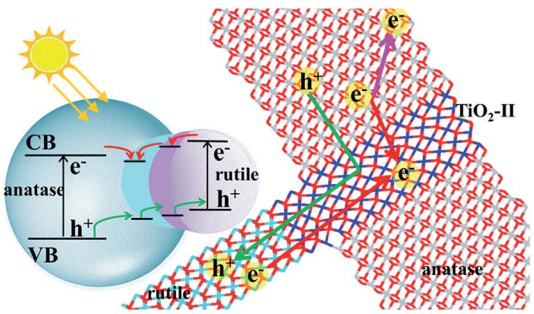
Jun Zheng, Mingyan Wu,* Feilong Jiang, Weiping Su* and Maochun Hong

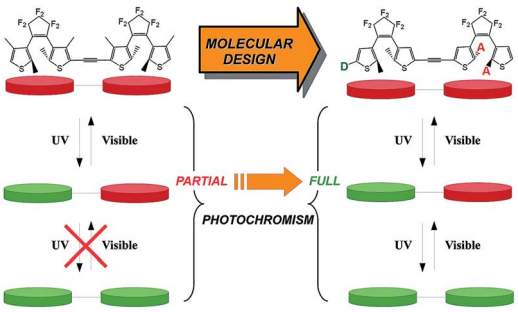
Two isostructural porphyrin Zr and Hf metal–organic frameworks (**FJI-H6** and **FJI-H7**) are rationally synthesized, and are constructed from 2.5 nm cubic cages.

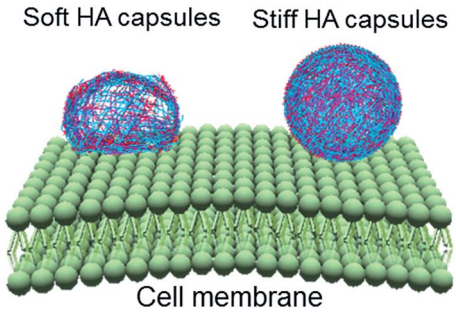
EDGE ARTICLES







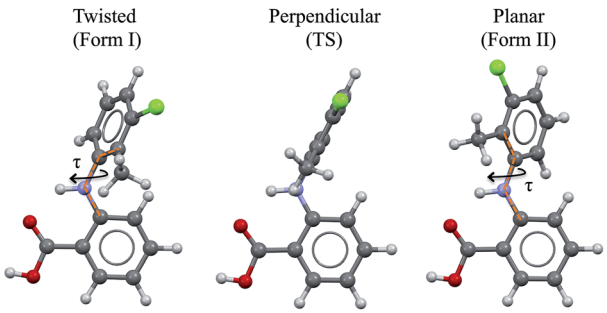




The role of capsule stiffness on cellular processing

Huanli Sun, Edgar H. H. Wong, Yan Yan, Jiwei Cui, Qiong Dai, Junling Guo, Greg G. Qiao* and Frank Caruso*

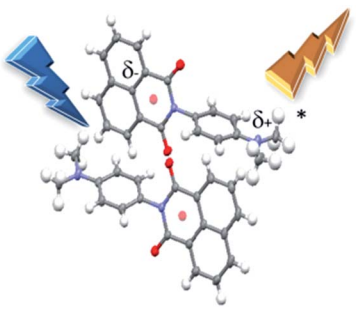
A systematic and quantitative study on the role of capsule stiffness in cellular processing was performed using hyaluronic acid capsules with tunable stiffness constructed *via* continuous assembly of polymers.



Can the study of self-assembly in solution lead to a good model for the nucleation pathway? The case of tolfenamic acid.

W. Du, A. J. Cruz-Cabeza, S. Woutersen, R. J. Davey* and Q. Yin

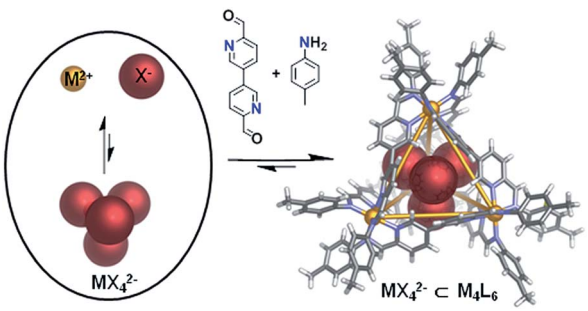
To further our understanding of the role of solution chemistry in directing nucleation processes new experimental and computational data are presented on the solution and crystallisation chemistry of tolfenamic acid (TA), a benchmark polymorphic compound.



Polymorph crystal packing effects on charge transfer emission in the solid state

Xiaoyan He, Andrew C. Benniston,* Hanna Saarenpää, Helge Lemmetyinen, Nikolia V. Tkachenko* and Ulrich Baisch

Condensation of 1,8-naphthalic anhydride with *N*,*N*-(dimethylamino)aniline produced the donor-acceptor compound **DMIM**, which crystallised from a chloroform–diethyl ether mixture to afford two different coloured crystal polymorphs.

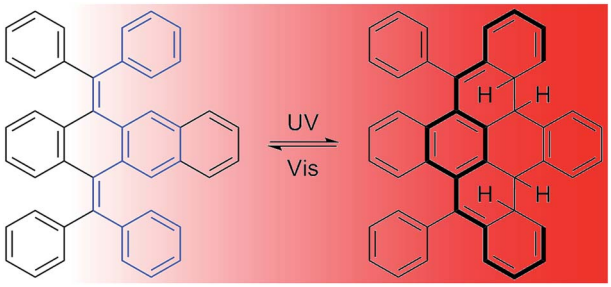


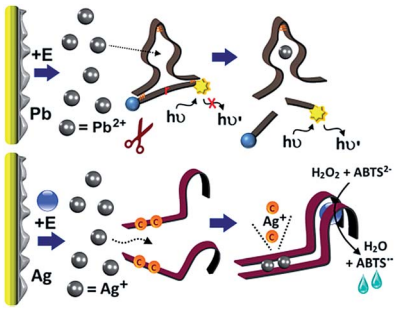
Mutual stabilisation between $M^{II}_4L_6$ tetrahedra and $M^{II}X_4^{2-}$ metallate guests

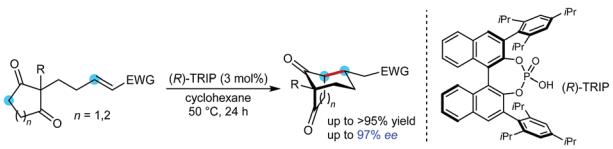
Imogen A. Riddell, Tanya K. Ronson and Jonathan R. Nitschke*

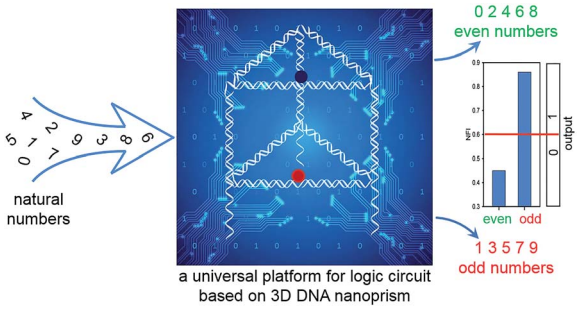
A series of $[M^{II}X_4]^{2-} \subset M^{II}_4L_6$ host–guest complexes are formed through the mutual stabilisation of the host and guest complexes; neither the host nor guest is stable in the absence of the other.

EDGE ARTICLES

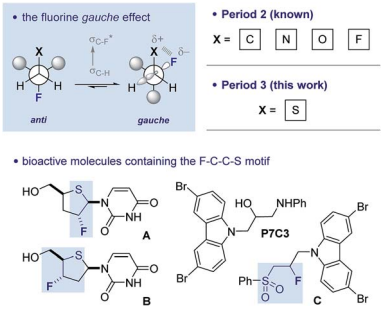








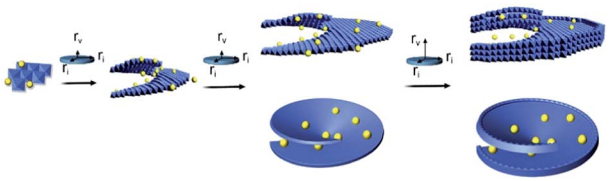
EDGE ARTICLES



Can acyclic conformational control be achieved *via* a sulfur–fluorine *gauche* effect?

C. Thiehoff, M. C. Holland, C. Daniliuc, K. N. Houk* and R. Gilmour*

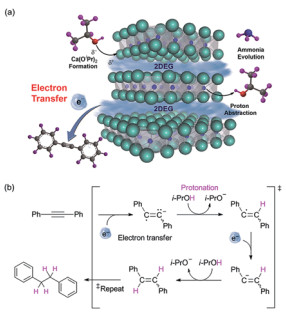
Herein detailed conformational analyses of β-fluorosulfides, -sulfoxides and -sulfones are disclosed, thus extending the scope of the fluorine *gauche* effect to the 3rd Period (X = SR, SOR, SO_2R; $\phi_{FCCS} \approx 60°$).



Edge overgrowth of spiral bimetallic hydroxides ultrathin-nanosheets for water oxidation

Bing Ni and Xun Wang*

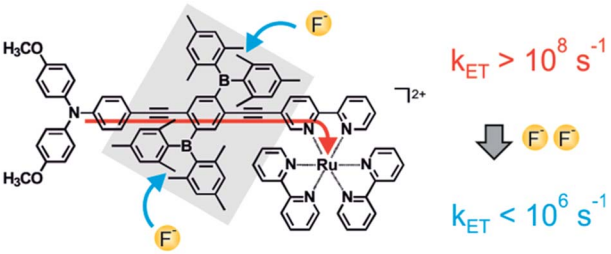
We have synthesized spiral ultrathin-nanosheets with overgrown edges of NiFe, CoNi and CoFe bimetallic hydroxides which show excellent performance for the OER.



Two dimensional inorganic electride-promoted electron transfer efficiency in transfer hydrogenation of alkynes and alkenes

Ye Ji Kim, Sun Min Kim, Eun Jin Cho, Hideo Hosono, Jung Woon Yang* and Sung Wng Kim*

A simple and highly efficient transfer hydrogenation of alkynes and alkenes by using a two-dimensional electride, dicalcium nitride ($[Ca_2N]^+ \cdot e^-$), as an electron transfer agent is disclosed.

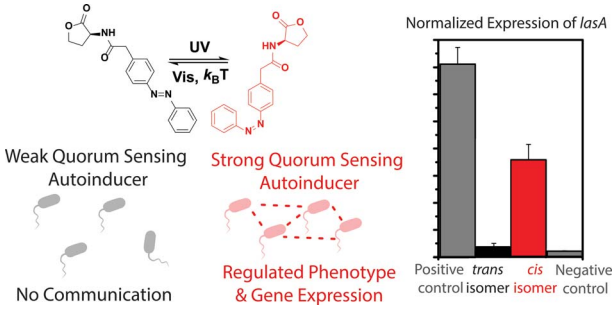


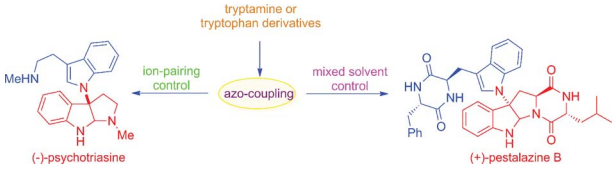
Fluoride binding to an organoboron wire controls photoinduced electron transfer

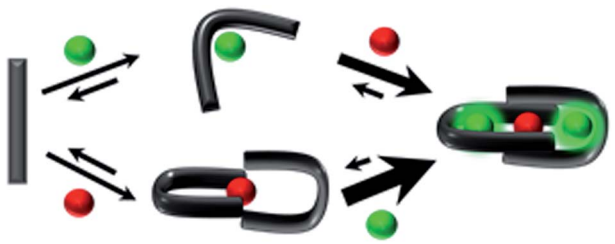
Jing Chen and Oliver S. Wenger*

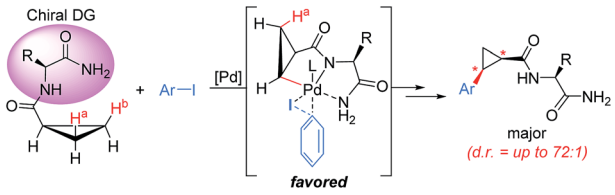
The efficiency of organoboron wires as mediators of long-range electron transfer can be controlled by anion binding.

EDGE ARTICLES

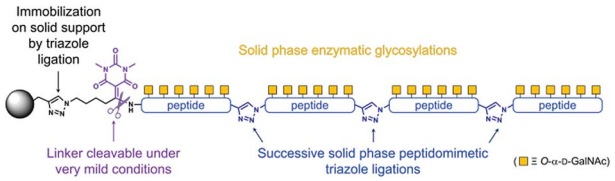








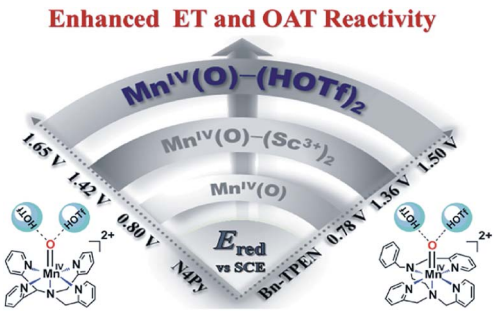
EDGE ARTICLES



Combining triazole ligation and enzymatic glycosylation on solid phase simplifies the synthesis of very long glycoprotein analogues

Mathieu Galibert, Véronique Piller, Friedrich Piller, Vincent Aucagne* and Agnès F. Delmas

Solid phase chemical ligation followed by enzymatic glycosylation exploits the advantages of a solid support to minimize the purification steps, constituting a promising approach for the synthesis of complex glycoproteins.



Tuning the reactivity of mononuclear nonheme manganese(IV)-oxo complexes by triflic acid

Junying Chen, Heejung Yoon, Yong-Min Lee, Mi Sook Seo, Ritimukta Sarangi, Shunichi Fukuzumi* and Wonwoo Nam*

Binding of two HOTf molecules to $Mn^{IV}(O)$ species resulted in contrasting effects on the reactivities in oxygen atom transfer and H-atom transfer reactions.

CORRECTION

Correction: Cobalt co-catalysis for cross-electrophile coupling: diarylmethanes from benzyl mesylates and aryl halides

Laura K. G. Ackerman, Lukiana L. Anka-Lufford, Marina Naodovic and Daniel J. Weix*

RETRACTION

Retraction: Homonuclear bond activation using a stable *N*,*N*′-diamidocarbene

Kelly M. Wiggins, Jonathan P. Moerdyk and Christopher W. Bielawski*